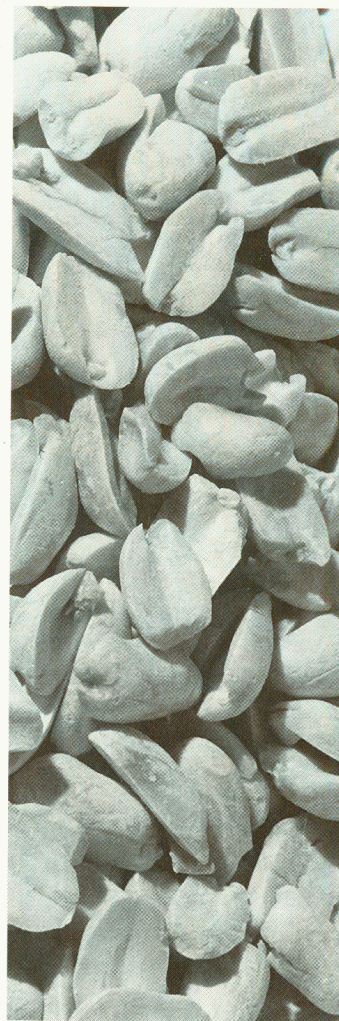


Peanuts

U.S. farmers produce from 3 to 4 billion pounds of peanuts annually. About 40 percent go into processed foods, including salted peanuts, candy, snack crackers and cookies, and, of course, peanut butter. America's love affair with peanut butter has lasted for many years and shows no signs of cooling off. Its smooth and crunchy varieties chew up about 700 million pounds of peanuts a year. Peanut butter is a mainstay of the School Lunch Program and is popular with both children and nutritionists. The latter point out that a pound of peanuts contains more protein, minerals, vitamins, and calories than a pound of beefsteak. The U.S. peanut industry also crushes about 400 million pounds a year for oil. The residue, peanut meal or cake, goes mostly for animal feed.

Peanuts have been the object of scientific study at the New Orleans regional laboratory since the early 1940's. The primary goal, then as now, was to improve peanut flavor and quality and to help increase peanut consumption. Another aim in the early days was to diminish the surplus of peanuts by developing new industrial uses for peanut meal and protein. And the South's research chemists did just that. Among the peanut protein products that came from the SRRC were glues, coatings for paper, a fire-extinguishing liquid, and sizings for paper and textiles. Chemists even made a textile fiber from peanut protein. Called Sarelon, it was soft and blended well with rayon or wool. It enjoyed a brief commercial existence before being supplanted by synthetics derived from less expensive materials.

More lasting success came with the discovery of ways to extend the shelf life of peanut products, since the high ratio of unstable fatty acids in peanuts once caused unpleasant flavor changes. The quality of peanut flavor is best preserved, researchers found, when kernels are properly dried immediately after harvest. They demonstrated that an optimum drying temperature minimizes development of off-flavors.



Partially defatted peanuts, the result of SRRC research, contain only half the calories of ordinary roasted peanuts but retain the high protein content and irresistible flavor.

Somewhat later, peanuts grown on four different continents were collected and analyzed, using instruments to detect substances that contribute to flavors. Experienced sensory panels evaluated flavor quality. The study showed clearly that U.S.-grown peanuts have the fewest off-flavors and the most peanut flavors rated as desirable. This information is used to market U.S. peanuts abroad.

Another problem solved was the loss of part of the peanutty flavor in partially defatted peanuts and in salted peanuts after roasting. To restore flavor, researchers first had to determine exactly what constituted peanut flavor and how much of each constituent was present in a full-flavored peanut. More than 200 different compounds were eventually identified in peanut flavor concentrates.

SRRC investigators in time perfected a process for removing part of the oil from the peanut without serious loss of flavor. They also succeeded in returning the lower calorie peanut to its original shape by expanding it in steam before roasting. Partially defatted peanuts are now sold by several companies, and the market is growing.

In marketing peanuts, the amount of moisture in the kernels is extremely important in determining the price. An SRRC-developed process for determining moisture content was adopted by the American Oil Chemists' Society and by peanut traders as their approved method. The Southern lab's expertise in testing was also put to work during the 1970's to analyze the composition of 20 different peanut protein products developed by various State and industrial laboratories. The products included flakes, flours, concentrates, and isolates.

Most consumers who have nibbled on the familiar red-skinned peanut are unaware of the existence of a white-skinned variety. They are rarely grown commercially because they are relatively flavorless. It was this very lack of flavor, however, that led two ARS chemists at the Southern lab to make them into peanut flour. The result was a white, tasteless flour containing five times as much protein as wheat flour.